

al a correction step of correcting each photographic image portion based on the generated correction information.

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REMARKS

This application has been reviewed in light of the Office Action dated April 3, 2002. Claims 1-20 are presented for examination, of which Claims 1, 9, and 17-20 are in independent form. Claims 1-17 have been amended to define more clearly what Applicant regards as his invention. New Claims 18-20 have been added to provide Applicant with a more complete scope of protection. Favorable reconsideration is requested.

The Office Action rejected Claims 1-3, 6-11, and 14-17 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,351,558 (Kuwata). Claims 4, 5, 12, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuwata in view of U.S. Patent No. 5,491,759 (Naoi et al.). Applicant submits that independent Claims 1, 9, and 17, together with the claims dependent thereon, are patentably distinct from the cited prior art for at least the following reasons.

The aspect of the present invention set forth in Claim 1 is directed to an image processing apparatus. The apparatus includes a detector, a generator, and a corrector. The detector detects an image area of an inputted image, not including a frame image. The generator generates correction information of the detected image area, and the corrector corrects the image area based on the generated correction information. The detector detects the frame image, which has gradation, by detecting pixels that have a same hue and a difference between lightness and

saturation having a predetermined value or less.

One important feature of Claim 1 is that the image processing apparatus detects a frame image that has gradation by detecting pixels with the same hue and a difference between lightness and saturation having a predetermined value or less. Support for this feature is set forth on pages 12 to 13 of the specification. By being able to detect a frame image, or frame, an image area that excludes the frame image can be corrected without encountering the problem described on page 1 of the specification, that is, without the frame image erroneously influencing correction processing of the image area.

Kuwata, as understood by Applicant, relates to an image processing system used to enhance the visual qualities of an inputted photographic image. Apparently, Kuwata teaches detecting a black, white or specific-color frame (see Figs. 16 and 17; and column 25, lines 8 to 31).

Nothing has been found in Kuwata that is believed to teach or suggest an image processing apparatus that includes "a detector, arranged to detect an image area excluding a frame image contained in an inputted image," wherein the "detector detects the frame image, which has gradation, by detecting pixels that have a same hue and a difference between lightness and saturation having a predetermined value or less," as recited in Claim 1. As understood by Applicant, Kuwata considers a black frame, a white frame, and a frame of a specific color, but does not consider a frame with gradation. Applicant submits that Naoi et al. fails to remedy the deficiencies of Kuwata.

Accordingly, Applicant submits that Claim 1 is not anticipated by Kuwata, and

respectfully requests withdrawal of the rejection under 35 U.S.C. § 102(e). Independent Claims 9 and 17 are method and computer program product claims corresponding to Claim 1, and are believed to be patentable for at least the same reasons as discussed above.

The other rejected claims in this application depend from one or another of the independent claims discussed above and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

The aspect of the present invention set forth in new Claim 18 is directed to an image processing apparatus that includes a detector, a generator, and a corrector. The detector detects a plurality of photographic image portions in an image, not including a frame image. The generator generates correction information corresponding to each photographic image portion detected by the detector, and the corrector corrects each photographic image portion based on the generated correction information.

One important feature of this claim is that a plurality of photographic image portions of an image is detected, not including a frame image, so that the detected plurality of photographic image portions may be corrected without encountering the problem discussed on page 1 of the specification. Support for Claim 18 is set forth in the specification as the second embodiment. Applicant submits that neither Kuwata nor Naoi et al., considered separately or in combination, discloses or suggests such a feature.


Accordingly, Applicant submits that Claim 18 is patentable over a combination

of Kuwata and Naoi et al. Independent Claims 19 and 20 are method and computer program product claims corresponding to Claim 18, and are believed to be patentable for at least the same reasons.

In view of the foregoing amendments and remarks, Applicant respectfully requests favorable reconsideration and early passage to issue of the present application.

Applicant's undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

  
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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Amended) An image processing apparatus comprising:

[detection means for detecting] a detector, arranged to detect an image area  
excluding a frame image contained in an [input] inputted image;

[generation means for generating] a generator, arranged to generate correction  
information of the detected image area; and

[correction means for correcting] a corrector, arranged to correct the image area  
based on [the basis of] the generated correction information,

wherein said detector detects the frame image, which has gradation, by detecting  
pixels that have a same hue and a difference between lightness and saturation having a  
predetermined value or less.

2. (Amended) The apparatus according to claim 1, wherein, when pixels adjacent  
to a pixel of interest satisfy a predetermined condition, said [detection means] detector  
determines that the pixel of interest constructs the frame image.

3. (Amended) The apparatus according to claim 2, wherein said [detection  
means] detector identifies the image area other than the frame image based on [the basis of] a  
detection result of the pixel constructing the frame image and supplies information representing  
the identified image area to said [generation means] generator and said [correction means]  
corrector .

4. (Amended) The apparatus according to claim 3, wherein said [detection means] detector scans the image in a horizontal direction in units of columns and detects, as two ends of the image area in the horizontal direction, a first column having a pixel determined not to construct the frame image and [the] a next column having a pixel determined to construct the frame image.

5. (Amended) The apparatus according to claim 3, wherein said [detection means] detector scans the image in a vertical direction in units of rows and detects, as two ends of the image area in the vertical direction, a first row having a pixel determined not to construct the frame image and [the] a next row having a pixel determined to construct the frame image.

6. (Amended) The apparatus according to claim 3, wherein, after correction by said [correction means is] corrector has ended, said [detection means] detector executes identification processing of an image area other than the frame image again.

7. (Amended) The apparatus according to claim 1, wherein said [generation means] generator generates, as the correction information, highlight and shadow points and white and black balances of the image area.

8. (Amended) The apparatus according to claim 7, wherein said [correction means] corrector corrects gradation of the image area based on [the basis of] the highlight and

shadow points and the white and black balances, which are generated by said [generation means] generator.

9. (Amended) An image processing method comprising the steps of:  
detecting an image area excluding a frame image contained in an [input] inputted  
image;

generating correction information of the detected image area; and  
correcting the image area based on [the basis of] the generated correction  
information,

wherein, in said detecting step, the frame image, which has gradation, is detected  
by detecting pixels that have a same hue and a difference between lightness and saturation having  
a predetermined value or less.

10. (Amended) The method according to claim 9, wherein [the detection] said  
detecting step comprises, when pixels adjacent to a pixel of interest satisfy a predetermined  
condition, determining that the pixel of interest constructs the frame image.

11. (Amended) The method according to claim 10, further comprising the steps  
of:

identifying the image area other than the frame image based on [the basis of] a  
detection result of the pixel constructing the frame image; and

supplying information representing the identified image area for generation processing of the correction information and correction processing of the image area.

12. (Amended) The method according to claim 11, wherein [the detection] said detecting step comprises scanning the image in a horizontal direction in units of columns and detecting, as two ends of the image area in the horizontal direction, a first column having a pixel determined not to construct the frame image and [the] a next column having a pixel determined to construct the frame image.

13. (Amended) The method according to claim 11, wherein [the detection] said detecting step comprises scanning the image in a vertical direction in units of rows and detecting, as two ends of the image area in the vertical direction, a first row having a pixel determined not to construct the frame image and [the] a next row having a pixel determined to construct the frame image.

14. (Amended) The method according to claim 11, wherein, after correction processing [is] has ended, identification processing of an image area other than the frame image is executed again.

15. (Amended) The method according to claim 9, wherein [the generation] said generating step comprises generating, as the correction information, highlight and shadow points and white and black balances of the image area.



16. (Amended) The method according to claim 15, wherein [the correction] said correcting step comprises correcting gradation of the image area based on [the basis of] the highlight and shadow points and the white and black balances, which are generated in [the generation] said generating step.

17. (Amended) A computer program product comprising a computer-readable medium [having] storing computer program code[, ] for executing an image processing method, said product comprising process procedure codes for:

[detecting procedure code for] a detection step of detecting an image area excluding a frame image contained in an [input] inputted image;

[generating procedure code for] a generation step of generating correction information of the detected image area; and

[correcting procedure code for] a correction step of correcting the image area based on [the basis of] the generated correction information,

wherein, in the detection step, the frame image, which has gradation, is detected by detecting pixels that have a same hue and a difference between lightness and saturation having a predetermined value or less.